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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Jean-Paul Mardon

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EXAMINER

PALABRICA, RICARDO J

ART UNIT

PAPER NUMBER

3663

MAIL DATE

DELIVERY MODE

10/27/2010

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/624,757	MARDON ET AL.	
	Examiner	Art Unit	
	Rick Palabrica	3663	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 August 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 5-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 5-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. 09/000,104.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1. Claims 9-12 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention..

The claimed invention is directed to a process of manufacturing a tube of zirconium-base alloy for the outside portion of cladding of a nuclear fuel rod or of a guide tube for a nuclear fuel assembly, as well as the product resulting from exercise of this process (e.g., see col. 1, lines 4+).

The process of producing the product (i.e., tube) starts with a bar of zirconium-base alloy:

“containing, by weight, 0.8-1.8 wt. % of niobium, 0.2-0.6 wt. % of tin and 0.02-0.4 wt. % of iron, plus inevitable impurities, and has a carbon content of 30-180 ppm, a silicon content of 10-120 ppm and an oxygen content of 600-1800 ppm.” See col. 1, lines 30+ or claim 5.

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There is neither an adequate description nor enabling disclosure as to how and in what manner how the process, which starts with a zirconium-base alloy bar with a composition containing the above-cited elements, produces a tube:

"consisting essentially of, 0.8-1.8 wt. % of niobium, 0.2-0.6 wt. % of tin and 0.02-0.4 wt. % of iron, plus inevitable impurities, and has a carbon content of 30-180 ppm, a silicon content of 10-120 ppm and an oxygen content of 600-1800 ppm, with the balance zirconium."

This produced tube is of a different elemental composition from the original bar because "comprising" is different from "consisting essentially".

The inclusive, open-ended transitional term "comprising", which is synonymous with "including", "containing", or "characterized by", and does not exclude additional, unrecited elements. See, e.g., MPEP 2111.03 and *Genentech, Inc. v. Chiron Corp.*, 112 F.3d 495, 501, 42 USPQ2d 1608, 1613 (Fed. Cir. 1997) ("Comprising" is a term of art used in claim language which means that the named elements are essential, but other elements may be added and still form a construct within the scope of the claim).

The transitional phrase "consisting essentially of" limits the scope of a claim to the specified materials or steps "and those that do not materially affect the basic and novel characteristic(s)" of the claimed invention. In re Herz, 537 F.2d 549, 551-52, 190 USPQ 461, 463 (CCPA 1976).

2. Claims 9-12 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The new matter pertains to a tube having an elemental composition that is different from the elemental composition of a bar used to manufacture this tube.

3. Claims 9-12 are rejected under 35 U.S.C. 112, first paragraph, as based on a disclosure which is not enabling. The elements or conditions that cause the product (i.e., tube) to have a different elemental composition from the elemental composition of the original bar, which is critical or essential to the practice of the invention, but not included in the claim(s) is not enabled by the disclosure. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976).

4. Claims 9-12 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. The omitted elements are: elements or conditions that cause the product (i.e., tube) to have a different elemental composition from the elemental composition of the original bar.

5. Claims 5-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 5 and 9 recite the limitation "the outside portion of cladding" in lines 2 and 1, respectively. There is insufficient antecedent basis for this limitation in the claims.

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Claims 9-12 are vague, indefinite and incomplete and their metes and bounds cannot be determined because there is no support for how a tube can have an elemental composition that is different from the elemental composition of a bar used to manufacture this tube.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 9-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Van Swam et al. (EP 0 533 073) in view of either one of De Mario et al. (U.S. 5,289,513) or Bradley (U.S. 4,309,250).

As to claims 9 and 12, Van Swam et al. teach a cladding for a nuclear fuel assembly made from a zirconium alloy containing, by weight: 0-3% niobium, 0-1.0% tin, 0-0.5% iron, 0-0.3% nickel, 0.05-0.20% (500-2000 ppm) oxygen and the remainder being impurities. They also teach the normal range of commercial impurities being carbon 270 ppm or less, oxygen 900 ppm or less, and silicon 120 ppm or less (see col. 3, lines 40-55).

The niobium, tin, iron, nickel, carbon, oxygen, and silicon concentrations in Van Swam meet the claimed concentrations of these elements in the claims. See MPEP 2131.03, which states:

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"[W]hen, as by a recitation of ranges or otherwise, a claim covers several compositions, the claim is 'anticipated' if one of them is in the prior art." Titanium Metals Corp. v. Banner; 778 F.2d 775, 227 USPQ 773.

Van Swam et al. teach that zirconium, which is alloyed with the above elements and having the specified concentrations, provides a structural element having superior strength and creep properties.

Either one of De Mario et al. or Bradley teach(es) that it is advantageous to reduce parasitic neutron absorption in the cladding of a nuclear fuel assembly (see col. 4, lines 40+ in De Mario et al. or col. 1, lines 45+ in Bradley).

Therefore, it would have been obvious to one of ordinary skill in the art to have used a zirconium base alloy consisting essentially of 0-3% niobium, 0-1.0% tin, 0-0.5% iron, 0-0.3% nickel, 0.05-0.20% (500-2000 ppm) oxygen and the remainder being impurities, i.e., said alloy including only the cited elements and excluding any other unspecified element, by the teaching in either one of De Mario et al. or Bradley to gain the additional advantage thereof (e.g., reduced parasitic neutron absorptions), because such modification is no more than the use of a well known expedient within the nuclear art.

This artisan would have recognized that parasitic neutron absorptions can be minimized by not including elements in the Van Swam et al. alloy that are not needed achieve the desired strength and creep properties. It would have been intuitively obvious to this artisan that extraneous elements are potential unwanted neutron absorbers that could compete with the nuclear fuel material for neutrons required to generate the fission reactions. Eliminating them from the alloy would have further enhanced the nuclear property of the structural material.

As to claims 10 and 11, the recited limitations are process limitations met by the above applied art. Note MPEP 2113, which states:

"[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777F.2d 695, 698, 227 USPQ 964, 966.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rick Palabrica whose telephone number is 571-272-6880. The examiner can normally be reached on 6:00-4:30, Mon-Thurs.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Keith can be reached on 571-272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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Primary Examiner, Art Unit 3663